

# Mapping State Proficiency Standards Onto the NAEP Scales

Results From the 2017 NAEP Reading  
and Mathematics Assessments

**U.S. Department of Education**

Betsy DeVos

*Secretary***Institute of Education Sciences**

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**Content Contact**

Taslima Rahman

(202) 245-6514

[taslima.rahman@ed.gov](mailto:taslima.rahman@ed.gov)

# Mapping State Proficiency Standards Onto the NAEP Scales

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and Mathematics Assessments

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**Taslima Rahman**  
National Center for Education Statistics

**Victor Bandeira de Mello**  
**Mary Ann Fox**  
**Cheng Shuang Ji**  
American Institutes for Research

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## What is NAEP?

The National Assessment of Educational Progress (NAEP), also known as The Nation's Report Card™, is an assessment program conducted by the National Center for Education Statistics (NCES) to inform the public of what elementary and secondary students in the United States know and can do in various subject areas, including reading, mathematics, and science.

Since 1969, NAEP has been a common measure of student achievement across the country. The NAEP program includes Long-Term Trend NAEP and Main NAEP. The Long-Term Trend NAEP monitors trends and reports student performance based on nationally representative samples of 9-, 13-, and 17-year-olds. The Main NAEP reflects current educational content and assessment methodology and measures performance of students in grades 4, 8, and 12 at the national level. Main NAEP also reports results of grades 4 and 8 reading and mathematics for participating states and selected large urban school districts.

The National Assessment Governing Board oversees and sets policy for the NAEP program.

Additional information about Main NAEP is available at <https://nces.ed.gov/nationsreportcard/>.

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# An Overview of the Study

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The National Center for Education Statistics (NCES) has periodically published reports using results from the National Assessment of Educational Progress (NAEP) to compare the proficiency standards states set for their students. Since standards vary across states, the results of the various state assessments cannot be used to directly compare students' progress. However, by placing a state standard onto the NAEP scale, a common metric for all states, a NAEP equivalent score of that standard is produced, which can be compared across states. The last mapping study report released by NCES ([NCES 2018-159](#)) compared state proficiency standards for school year 2014–15.

The 2017 edition of this report highlights the results of mapping state proficiency standards onto the NAEP scales using state assessment results from the 2016–17 school year and the 2017 NAEP assessments for public schools. The study focuses on the reading and mathematics standards that states set for grades 4 and 8. For each state, the report displays the NAEP equivalent scores with a range of 0 to 500. The NAEP equivalent scores are shown with respect to the NAEP achievement levels: *NAEP Basic* and *NAEP Proficient*.

As is typical in NAEP reporting, 2017 results are compared with 2015 results to show more immediate changes and with 2007 results to show longer-term trends.

The analyses conducted for this edition of the study address the following questions:

- How do the 2017 NAEP equivalent scores for states compare with each other?
- How do the 2017 NAEP equivalent scores compare with those from 2015 and 2007?

Overall, in 2017, most state standards for both grades and both subjects mapped at the *NAEP Basic* achievement level. In addition, for states with all three years of data, the difference between the highest and lowest NAEP equivalent scores of the state standards was smaller in 2017 than in 2015 and 2007 for each grade and subject, with the exception of grade 8 mathematics standards.

The mapping study has contributed to the discussion on achievement standards for the nation's students since 2003. The study is not an evaluation of the various state assessments or of the quality of the states' achievement standards, and the findings should not be interpreted as evidence of deficiencies in state assessments or in NAEP. It should be noted that state assessments and NAEP may vary in format and administration because they have different goals and are developed for different purposes. The mapping of the state standards does not imply that the NAEP achievement levels are more valid than the state standards or that states should emulate NAEP standards. A wide range of policy considerations are involved in setting achievement standards, and what is appropriate for NAEP may not be the best fit for a given state. NAEP's achievement levels are used in this study to interpret the meaning of the NAEP scale scores. As provided by law, NAEP achievement levels are to be used on a trial basis and should be interpreted with caution.<sup>1</sup>

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<sup>1</sup> For more information on the NAEP achievement levels and their trial status, see [https://nces.ed.gov/nationsreportcard/guides/scores\\_achv.aspx](https://nces.ed.gov/nationsreportcard/guides/scores_achv.aspx).

# Mapping State Standards Onto the NAEP Scales

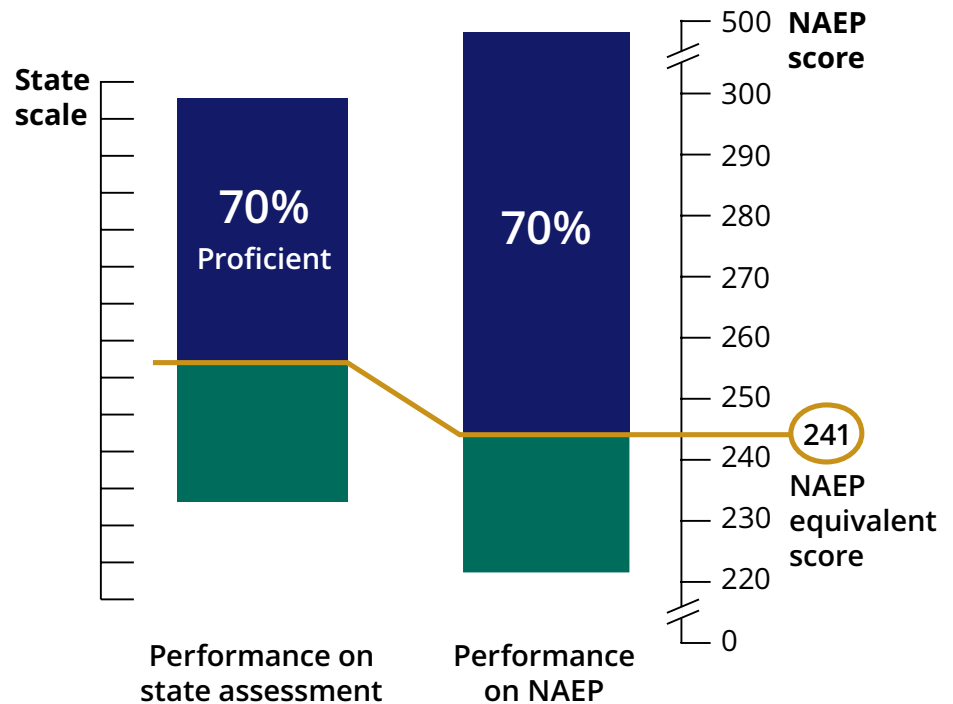
This mapping report displays the NAEP equivalent score for each state, which is the placement of state standards for proficient performance in reading and mathematics onto the 0–500 NAEP scale. **Exhibit 1** illustrates the process for estimating the NAEP equivalent score for a given state’s proficiency on its own assessment. The bar on the left shows performance on the state assessment for a given grade and subject, where 70 percent of students in the state met the state standard for proficiency. The bar on the right shows performance on NAEP. It shows the top 70 percent of students in that state who performed at or above the NAEP score of 241. The score 241 is the estimated NAEP score equivalent to the state standard for proficiency.

While some states created their own assessment programs, other states participated in one of three testing programs:

[ACT Aspire](#), [Partnership for Assessment of Readiness for](#)

[College and Careers](#), or [Smarter Balanced Assessment Consortium](#) (referred to, respectively, as ACT, PARCC, and SBAC; see **Table 2**). For those states, NAEP equivalent scores were estimated in two ways. First, the scores were estimated for the testing program as a whole by considering the participating states as one single jurisdiction. The figures in the main report show these estimates. Second, the NAEP equivalent scores were estimated for each state individually, and these estimates are found in **Tables A-1** and **A-2** in the Technical Notes available at <https://nces.ed.gov/nationsreportcard/pubs/studies/2019040a.aspx>. The Technical Notes (NCES 2019-040-A) also provide additional details on the mapping methodology.

**Exhibit 1. Illustration of mapping to NAEP**



# Data Sources

The analyses in this report are based on NAEP and state assessment results for public schools that participated in the grades 4 and 8 NAEP assessments in reading and mathematics, weighted to represent the states. The analyses used data from (a) NAEP data files for the states (including the District of Columbia and Puerto Rico,<sup>2</sup> which are referred to as states in this report) that participated in the 2017 assessments and (b) state assessment 2016–17 school-level achievement data from *EDFacts* and, in some cases, directly from the states. In addition, this report includes results from earlier mapping studies in 2007 ([NCES 2010-456](#)) and 2015 ([NCES 2018-159](#)) to make comparisons with 2017 results.

## Data availability

For 2017, New Hampshire was not included in the mapping study because the state did not use the same assessment for all students in either of the grades or subjects. Puerto Rico was not included for grades 4 and 8 reading because the NAEP reading assessments were not administered in the jurisdiction.

Furthermore, some states were not included in the analyses for grade 8 because of differences in the population and content assessed by NAEP and the state assessments. In 2007, 2015, and 2017, some states did not require all grade 8 students to take the state’s general assessments. For example, some students took an end-of-course assessment in advanced English language arts, algebra I, or geometry in place of the general reading or mathematics assessment. As a result, the student populations assessed by the state and by NAEP may not necessarily be the same. Other states administered assessments focused on specific content within reading/English language arts or mathematics. For these states, the differing content assessed by NAEP and the state assessment precluded the state standard from being mapped onto the NAEP scale. In 2017, the PARCC standard for grade 8 mathematics was not estimated because the states participating in PARCC did not require all grade 8 students to take a general mathematics assessment (e.g., some students took an algebra I exam).

To determine if the mapping was appropriate, NCES surveyed the states on their assessment practices in each school year and followed up with each state to resolve unexplained discrepancies identified during the data review process. **Table 1** lists the states not included in the analyses. Note that not being able to map these states onto the NAEP scale does not suggest a problem with the quality of the state assessment or performance standard; rather, it indicates that these state standards could not be meaningfully mapped onto the NAEP scale.

**Table 1. States that were not included in the mapping study, by grade and subject: 2017**

Subject	Grade 4	Grade 8
Reading	New Hampshire and Puerto Rico	Nevada, New Hampshire, Puerto Rico, and Texas
Mathematics	New Hampshire	Arizona, Colorado, District of Columbia, Florida, Georgia, Illinois, Louisiana, Maryland, Missouri, Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Rhode Island, Tennessee, Texas, Utah, and Virginia

NOTE: New Hampshire was not included in the study for either grade or subject because the state did not use the same assessment for all students in either of the grades or subjects. Puerto Rico was not included for grades 4 and 8 reading because the NAEP reading assessments were not administered in the jurisdiction. The rest of the states were excluded from the study because these states did not require all eligible students to take a general reading or mathematics assessment. SOURCE: State education agencies.

<sup>2</sup> Mathematics only. In Puerto Rico, NAEP mathematics assessments are translated into Spanish.

# Data Sources—Continued

## Testing programs

Each state determines the assessment to measure its students' progress in relation to the standards it sets. Some states use the same set of standards and testing program. As noted in the section Mapping State Standards Onto the NAEP Scales, for states that belong to a testing program, the mapping results are reported for the placement of both the individual state performance standards on the NAEP scale and the standards from the testing program on the NAEP scale. **Table 2** lists the states and their respective testing programs for 2017.

**Table 2. States and their testing program: 2017**

Testing program	States
ACT Aspire	Alabama and Arkansas
Partnership for Assessment of Readiness for College and Careers (PARCC)	Colorado, District of Columbia, Illinois, Maryland, New Jersey, New Mexico, and Rhode Island
Smarter Balanced Assessment Consortium (SBAC)	California, Connecticut, <sup>1</sup> Delaware, Hawaii, Idaho, Montana, Nevada, New Hampshire, North Dakota, Oregon, South Dakota, Vermont, Washington, and West Virginia
Individual state program	Alaska, Arizona, Florida, Georgia, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Puerto Rico, South Carolina, Tennessee, Texas, Utah, Virginia, Wisconsin, and Wyoming

<sup>1</sup> Connecticut administered the SBAC reading assessment but was not included in the estimation of the NAEP equivalent score of the SBAC reading standard because the state did not use all components of the SBAC reading assessment.

SOURCE: State education agencies.

Note that there may be different cut points mapped onto the NAEP scales for states sharing the same tests and achievement standard, as well as for year-to-year changes in the estimates of the same states that did not change tests or standards. The reason for the differences is likely multifactorial. For example, differences could be explained by curricular differences between the states (thereby affecting the skills learned and tested by NAEP and the state assessment), by systematic differences in the student population, and/or by differences in policies or test administration practices. **Table 3** displays the cut score for each achievement level in reading and mathematics for grades 4 and 8.

**Table 3. NAEP achievement level cut scores by subject and grade: 2017**

NAEP achievement level	Reading		Mathematics	
	Grade 4	Grade 8	Grade 4	Grade 8
NAEP Basic	208	243	214	262
NAEP Proficient	238	281	249	299
NAEP Advanced	268	323	282	333

NOTE: The NAEP scales in reading and mathematics range from 0 to 500. NAEP achievement levels are performance standards that describe what students should know and be able to do. Students performing at or above the *NAEP Proficient* level on NAEP assessments demonstrate solid academic performance and competency over challenging subject matter. *NAEP Proficient* does not represent grade-level proficiency as determined by other assessment standards (e.g., state or district assessments). Learn more about the [NAEP achievement levels](https://nces.ed.gov/nationsreportcard/reading/achieveall.aspx).

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), retrieved from <https://nces.ed.gov/nationsreportcard/reading/achieveall.aspx> (for reading) and <https://nces.ed.gov/nationsreportcard/mathematics/achieveall.aspx> (for mathematics).



# Interpreting the Results

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For each grade (4 and 8) and subject (reading and mathematics), there are three sets of results with an accompanying figure. The first figure shows the estimates of the 2017 NAEP equivalent score for proficient performance on a state standard for each state. States are displayed in ascending order based on their NAEP equivalent score (i.e., from lowest to highest). States participating in ACT, PARCC, and SBAC are shown in alphabetical order. The second figure describes the number of states whose standards for proficient performance can be classified into each range of NAEP achievement levels (below *NAEP Basic*, *NAEP Basic*, and *NAEP Proficient*) for 2007, 2015, and 2017. The third figure presents the range between the highest and lowest NAEP equivalent scores of state standards for proficient performance in 2007, 2015, and 2017. Only states with all 3 years of data are included in the second and third figures. Therefore, results presented in the 2017 report may not necessarily match those in the earlier reports ([NCES 2010-456](#) or [NCES 2018-159](#)).

For figures showing the NAEP equivalent scores of state standards for proficient performance, the vertical lines around each state's NAEP equivalent score indicate the margin of error associated with the estimate. If the lower or upper limit of the margin of error crosses a line associated with a NAEP achievement level, the state standard is classified in the higher level. When shown, a black triangle under a state indicates that the relative error of the NAEP equivalent score of that state's standard is large and results should be interpreted with caution. More details on the results can be found in the [Technical Notes \(NCES 2019-040-A\)](#).

Although NAEP results are reported on a 0–500 scale for different grades and subjects, they do not have the same meaning across grades or subjects. Therefore, results shown in figures or tables are not comparable across grades or subjects.

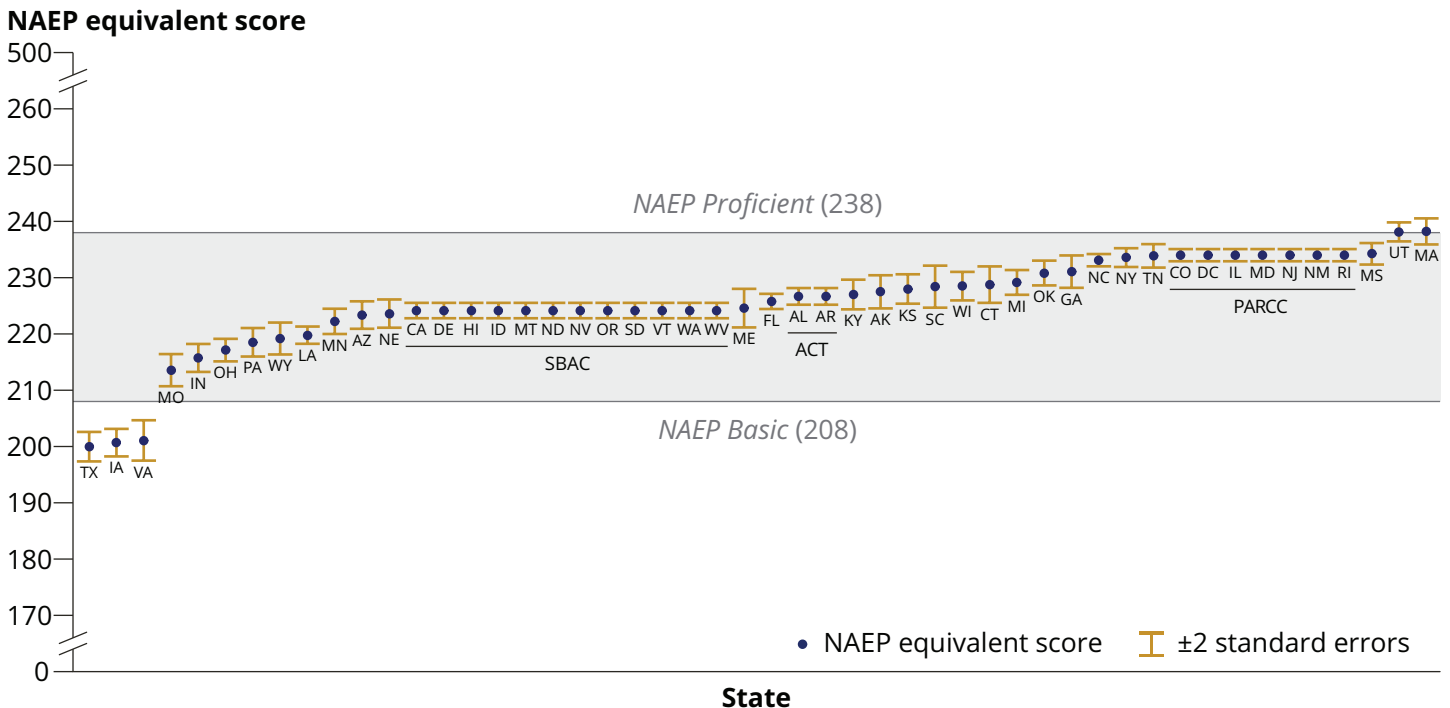


## 2017 Grade 4 Reading

The following figures present results for grade 4 reading. Overall, state standards for proficiency have mapped at a higher NAEP achievement level over time. In addition, variations among state achievement standards are narrowing.

For the first figure with 2017 data only, 50 states are included in the analysis; for the second and third figures with data from 2007, 2015, and 2017, the same set of 43 states with all 3 years of data available is used in both analyses.

### NAEP equivalent scores of state grade 4 reading standards for proficient performance, by state: 2017



- In grade 4 reading, 47 of the 50 states included in the study had standards at or above the *NAEP Basic* level. Two states—Utah and Massachusetts—had standards at the *NAEP Proficient* level, while three states—Texas, Iowa, and Virginia—had standards below the *NAEP Basic* level.
- All three testing programs—ACT, PARCC, and SBAC—had standards that mapped at the *NAEP Basic* level.

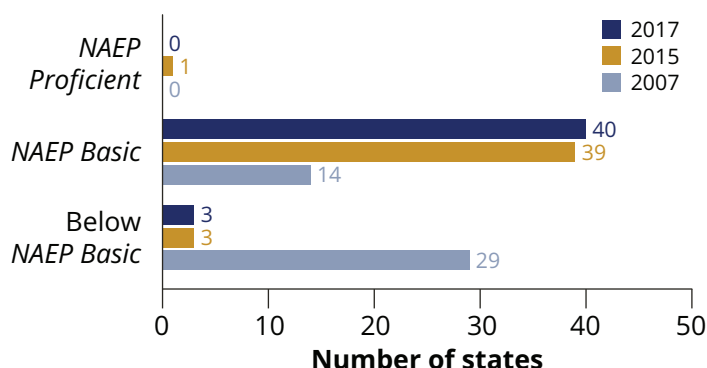
NOTE: New Hampshire was not included in the study because the state did not use the same assessment for all students in grade 4 reading. Puerto Rico was not included because the NAEP grade 4 reading assessment was not administered in the jurisdiction. Connecticut administered the SBAC reading assessment but was not included in the estimation of the NAEP equivalent score of the SBAC reading standard because the state did not use all components of the SBAC reading assessment. ACT refers to ACT Aspire, PARCC refers to Partnership for Assessment of Readiness for College and Careers, and SBAC refers to Smarter Balanced Assessment Consortium. The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. A state is determined to be in a given NAEP achievement level range if its NAEP equivalent score is statistically significantly lower than the cut score of the next highest achievement level.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2017 Reading Assessment.



### Number of states, by state standards for proficient performance in grade 4 reading classified into NAEP achievement levels: 2007, 2015, and 2017

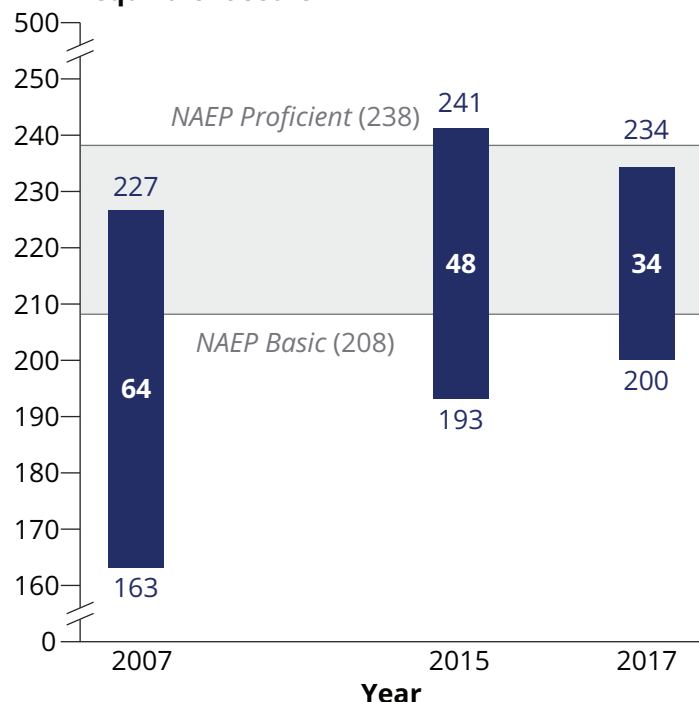
NAEP achievement level



- Of the 43 states with all 3 years of data, 40 states had grade 4 reading standards at the *NAEP Basic* level in 2017, an increase from 39 states in 2015 and 14 states in 2007.
- None of the states had grade 4 reading standards at the *NAEP Proficient* level in 2017.
- Three states had grade 4 reading standards that were below the *NAEP Basic* level in 2017 and in 2015, a decrease from 29 states in 2007.

### Range between the highest and lowest NAEP equivalent scores of state standards for proficient performance in grade 4 reading: 2007, 2015, and 2017

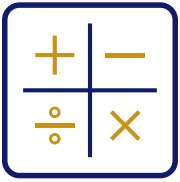
NAEP equivalent score



- In 2017, the difference between the highest and lowest NAEP equivalent scores for grade 4 reading was 34 points, which is smaller than the 48-point difference in 2015 and the 64-point difference in 2007.
- The 34-point difference between the highest and lowest mapped standards is larger than the difference between the grade 4 reading cut scores for the *NAEP Basic* and *Proficient* levels (see **Table 3**).

NOTE: For comparability, the District of Columbia, Massachusetts, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Puerto Rico, and Utah were excluded from the counts. As a result, 43 states with all 3 years of data were used in the comparisons (see **Table 4**). The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. Results shown in the figures are based on unrounded numbers.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007, 2015, and 2017 Reading Assessments.

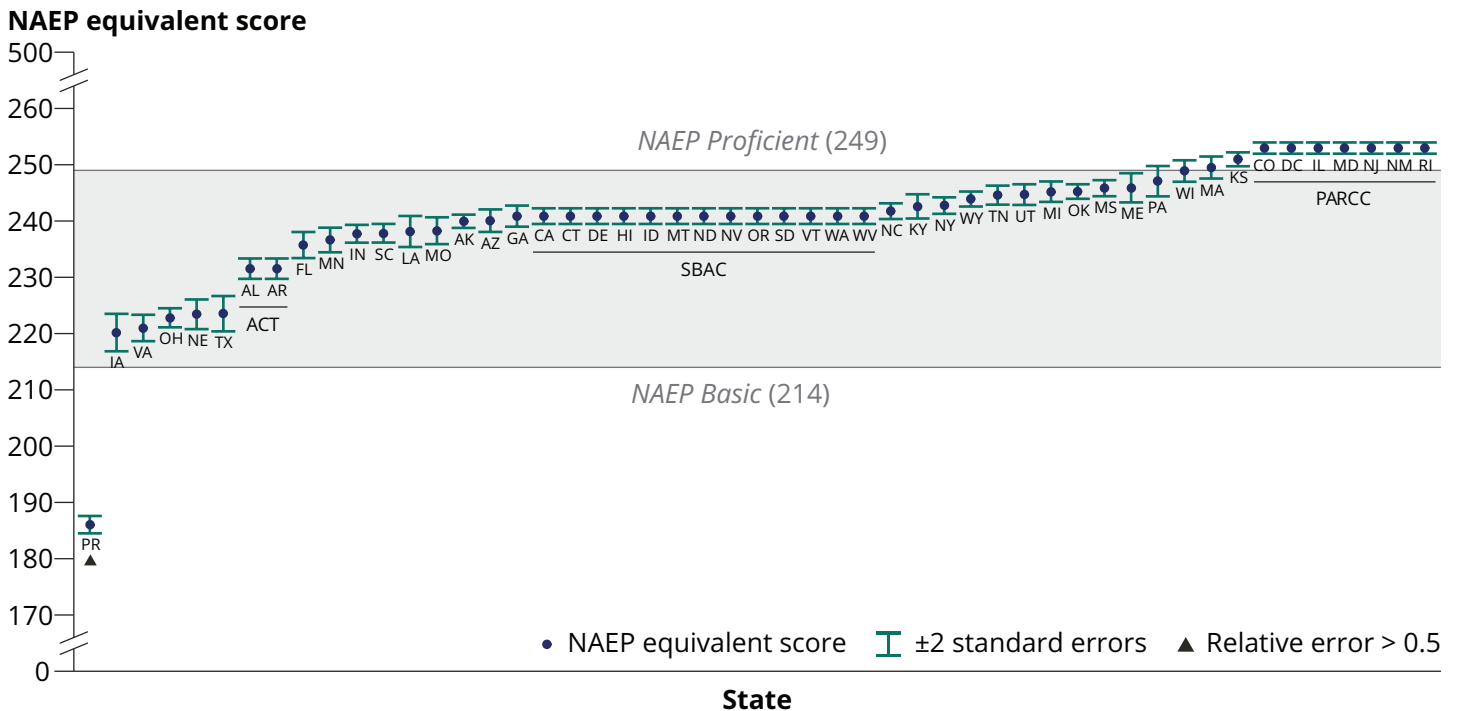


# 2017 Grade 4 Mathematics

The following figures present results for grade 4 mathematics. Overall, state standards for proficiency have mapped at a higher NAEP achievement level over time. In addition, variations among state achievement standards are narrowing.

For the first figure with 2017 data only, 51 states are included in the analysis; for the second and third figures with data from 2007, 2015, and 2017, the same set of 43 states with all 3 years of data available is used in both analyses.

## NAEP equivalent scores of state grade 4 mathematics standards for proficient performance, by state: 2017



- In grade 4 mathematics, 50 of the 51 states included in the study had standards at or above the *NAEP Basic* level. Eleven states—Pennsylvania, Wisconsin, Massachusetts, Kansas, Colorado, the District of Columbia, Illinois, Maryland, New Jersey, New Mexico, and Rhode Island—had standards at the *NAEP Proficient* level.
- The PARCC standard mapped at the *NAEP Proficient* level. ACT and SBAC standards mapped at the *NAEP Basic* level.

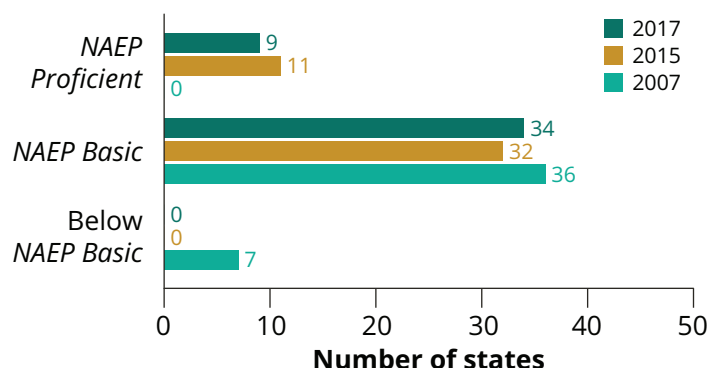
NOTE: New Hampshire was not included in the study because the state did not use the same assessment for all students in grade 4 mathematics. ACT refers to ACT Aspire, PARCC refers to Partnership for Assessment of Readiness for College and Careers, and SBAC refers to Smarter Balanced Assessment Consortium. The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. A state is determined to be in a given NAEP achievement level range if its NAEP equivalent score is statistically significantly lower than the cut score of the next highest achievement level.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2017 Mathematics Assessment.



### Number of states, by state standards for proficient performance in grade 4 mathematics classified into NAEP achievement levels: 2007, 2015, and 2017

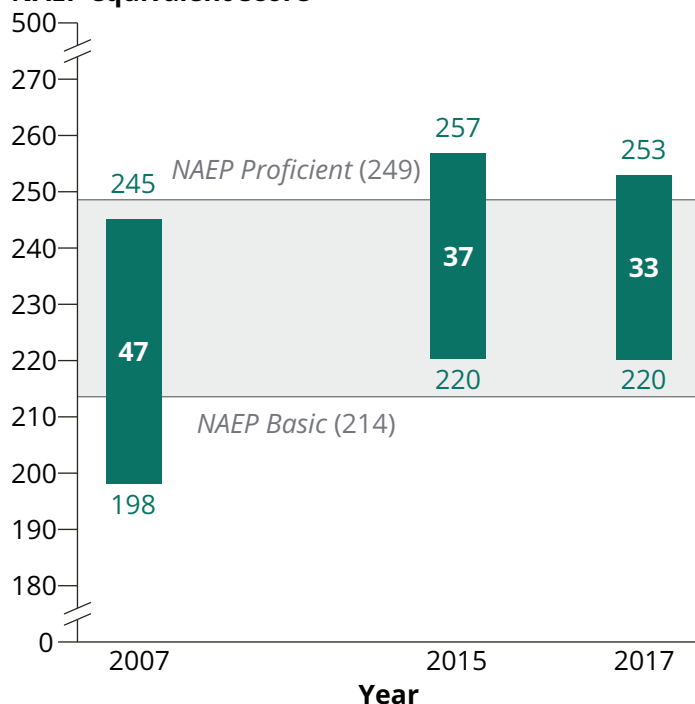
#### NAEP achievement level



- Of the 43 states with all 3 years of data, all had grade 4 mathematics standards at or above the *NAEP Basic* level in 2017 and in 2015, an increase from 36 states in 2007.
- Nine states had grade 4 mathematics standards at the *NAEP Proficient* level in 2017, a decrease from 11 states in 2015 but an increase from none in 2007.
- None of the 43 states had grade 4 mathematics standards that were below the *NAEP Basic* level in 2017 or in 2015, a decrease from 7 states in 2007.

### Range between the highest and lowest NAEP equivalent scores of state standards for proficient performance in grade 4 mathematics: 2007, 2015, and 2017

#### NAEP equivalent score



- In 2017, the difference between the highest and lowest NAEP equivalent scores for grade 4 mathematics was 33 points, which is smaller than the 37-point difference in 2015 and the 47-point difference in 2007.
- The 33-point difference between the highest and lowest mapped standards is smaller than the difference between the grade 4 mathematics cut scores for the *NAEP Basic* and *Proficient* levels (see **Table 3**).

NOTE: For comparability, the District of Columbia, Massachusetts, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Puerto Rico, and Utah were excluded from the counts. As a result, 43 states with all years of data were used in the comparisons (see **Table 4**). The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. Results shown in the figures are based on unrounded numbers.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007, 2015, and 2017 Mathematics Assessments.

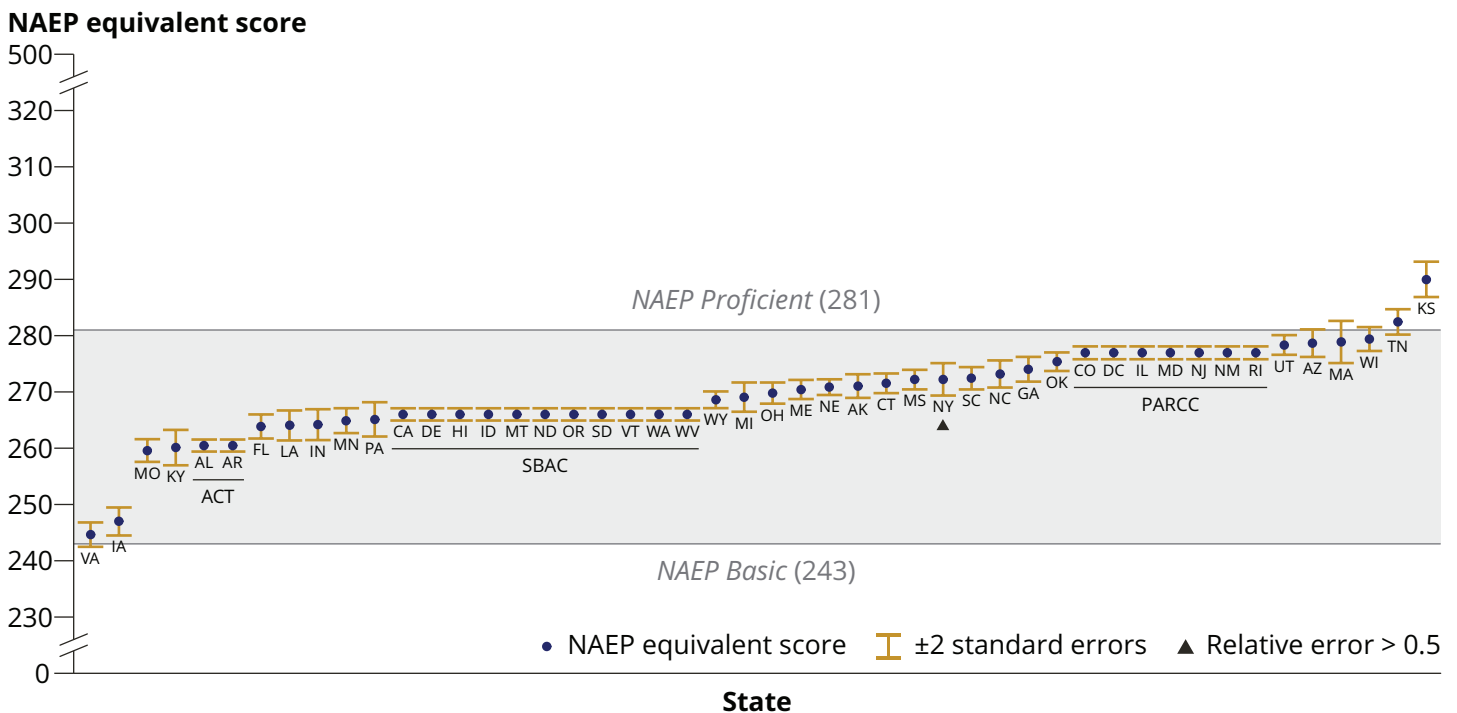


## 2017 Grade 8 Reading

The following figures present results for grade 8 reading. Overall, state standards for proficiency have mapped at a higher NAEP achievement level over time. In addition, variations among state achievement standards are narrowing.

For the first figure with 2017 data only, 48 states are included in the analysis; for the second and third figures with data from 2007, 2015, and 2017, the same set of 41 states with all 3 years of data available is used in both analyses.

### NAEP equivalent scores of state grade 8 reading standards for proficient performance, by state: 2017



- In grade 8 reading, all of the 48 states included in the study had standards at or above the *NAEP Basic* level. Five states—Arizona, Massachusetts, Wisconsin, Tennessee, and Kansas—had standards at the *NAEP Proficient* level.
- All three testing programs—ACT, PARCC, and SBAC—had standards that mapped at the *NAEP Basic* level.

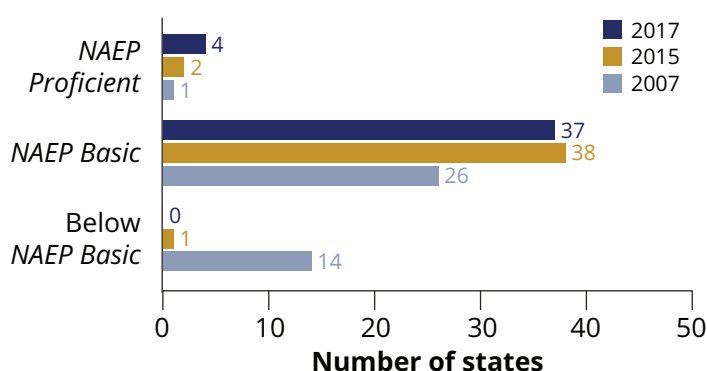
NOTE: New Hampshire was not included in the study because the state did not use the same assessment for all students in grade 8 reading. Puerto Rico was not included because the NAEP grade 8 reading assessment was not administered in the jurisdiction. Nevada and Texas were not included in the study because the two states did not require all eligible students to take a general grade 8 reading assessment. Connecticut administered the SBAC reading assessment but was not included in the estimation of the NAEP equivalent score of the SBAC reading standard because the state did not use all components of the SBAC reading assessment. ACT refers to ACT Aspire, PARCC refers to Partnership for Assessment of Readiness for College and Careers, and SBAC refers to Smarter Balanced Assessment Consortium. The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. A state is determined to be in a given NAEP achievement level range if its NAEP equivalent score is statistically significantly lower than the cut score of the next highest achievement level.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2017 Reading Assessment.



### Number of states, by state standards for proficient performance in grade 8 reading classified into NAEP achievement levels: 2007, 2015, and 2017

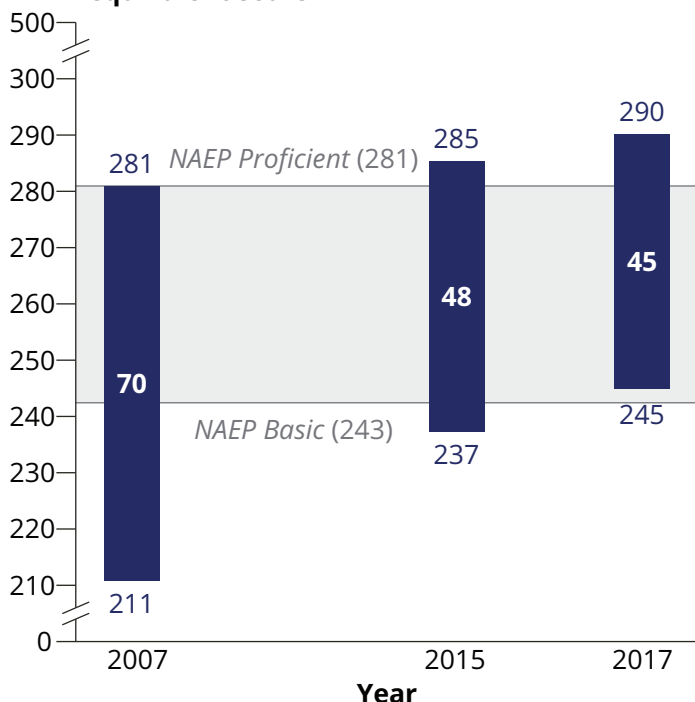
NAEP achievement level



- Of the 41 states with all 3 years of data, all had grade 8 reading standards at or above the *NAEP Basic* level in 2017, an increase from 40 states in 2015 and 27 states in 2007.
- Four states had grade 8 reading standards at the *NAEP Proficient* level in 2017, an increase from 2 states in 2015 and 1 state in 2007.
- None of the 41 states had grade 8 reading standards that were below the *NAEP Basic* level in 2017, a decrease from 1 state in 2015 and 14 states in 2007.

### Range between the highest and lowest NAEP equivalent scores of state standards for proficient performance in grade 8 reading: 2007, 2015, and 2017

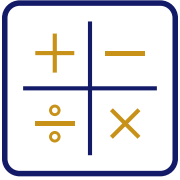
NAEP equivalent score



- In 2017, the difference between the highest and lowest NAEP equivalent scores for grade 8 reading was 45 points, which is smaller than the 48-point difference in 2015 and the 70-point difference in 2007.
- The 45-point difference between the highest and lowest mapped standards is larger than the difference between the grade 8 reading cut scores for the *NAEP Basic* and *Proficient* levels (see **Table 3**).

NOTE: For comparability, the District of Columbia, Iowa, Massachusetts, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Puerto Rico, Texas, and Utah were excluded from the counts. As a result, 41 states with all 3 years of data were used in the comparisons (see **Table 4**). The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. Results shown in the figures are based on unrounded numbers.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007, 2015, and 2017 Reading Assessments.



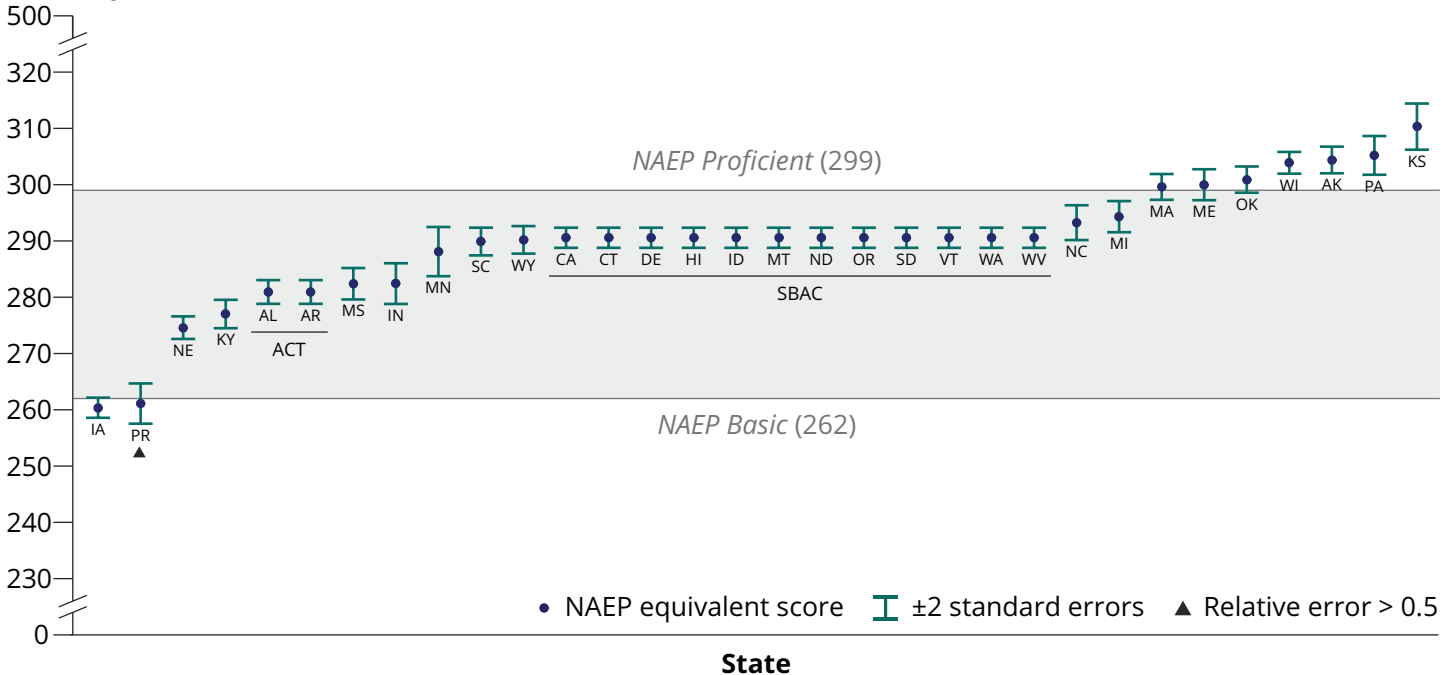
# 2017 Grade 8 Mathematics

The following figures present results for grade 8 mathematics. Overall, state standards for proficiency have changed little over time.

For the first figure with 2017 data only, 32 states are included in the analysis; for the second and third figures with data from 2007, 2015, and 2017, the same set of 23 states with all 3 years of data available is used in both analyses.

## NAEP equivalent scores of state grade 8 mathematics standards for proficient performance, by state: 2017

### NAEP equivalent score



- For grade 8 mathematics, all of the 32 states included in the study had standards at or above the *NAEP Basic* level. Seven states—Massachusetts, Maine, Oklahoma, Wisconsin, Alaska, Pennsylvania, and Kansas—had standards at the *NAEP Proficient* level.
- The ACT and SBAC standards mapped at the *NAEP Basic* level. The PARCC standard was not estimated because the states participating in PARCC did not require all grade 8 students to take a general mathematics assessment.

NOTE: New Hampshire was not included in the study because the state did not use the same assessment for all students in grade 8 mathematics. There were 19 states that were not included in the study because they did not require all eligible students to take a general grade 8 mathematics assessment. ACT refers to ACT Aspire, PARCC refers to Partnership for Assessment of Readiness for College and Careers, and SBAC refers to Smarter Balanced Assessment Consortium. The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. A state is determined to be in a given NAEP achievement level range if its NAEP equivalent score is statistically significantly lower than the cut score of the next highest achievement level.

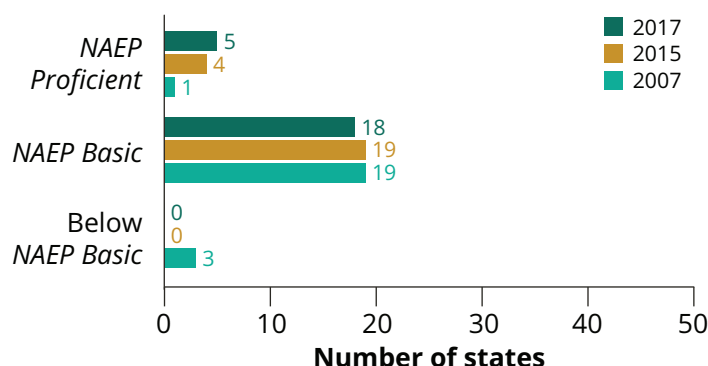
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2017 Mathematics Assessment.





## Number of states, by state standards for proficient performance in grade 8 mathematics classified into NAEP achievement levels: 2007, 2015, and 2017

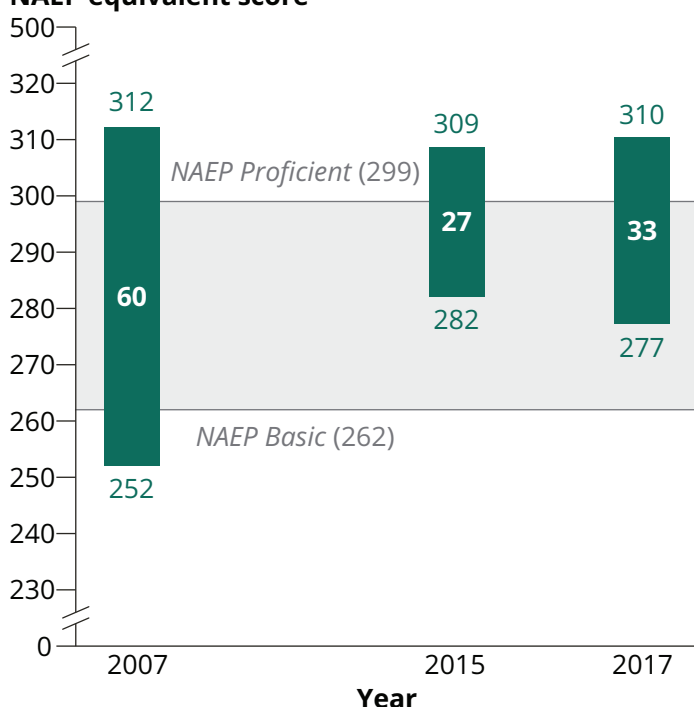
### NAEP achievement level



- Of the 23 states with all 3 years of data, all had grade 8 mathematics standards at or above the *NAEP Basic* level in 2017 and in 2015, an increase from 20 states in 2007.
- Five states had grade 8 mathematics standards at the *NAEP Proficient* level in 2017, an increase from 4 states in 2015 and 1 state in 2007.
- None of the 23 states had standards that were below the *NAEP Basic* level in 2017 or in 2015, a decrease from 3 states in 2007.

## Range between the highest and lowest NAEP equivalent scores of state standards for proficient performance in grade 8 mathematics: 2007, 2015, and 2017

### NAEP equivalent score



- In 2017, the difference between the highest and lowest NAEP equivalent scores for grade 8 mathematics was 33 points, which is larger than the 27-point difference in 2015 and smaller than the 60-point difference in 2007.
- The 33-point difference between the highest and lowest mapped standards is smaller than the difference between the grade 8 mathematics cut scores for the *NAEP Basic* and *Proficient* levels (see **Table 3**).

NOTE: For comparability, Arizona, Arkansas, California, Colorado, the District of Columbia, Florida, Georgia, Illinois, Iowa, Louisiana, Maryland, Massachusetts, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Puerto Rico, Rhode Island, Tennessee, Texas, Utah, and Virginia were excluded from the counts. As a result, 23 states with all 3 years of data were used in the comparisons (see **Table 4**). The classification of NAEP equivalent scores into NAEP achievement levels accounts for the margin of error associated with each estimate. Results shown in the figures are based on unrounded numbers.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007, 2015, and 2017 Mathematics Assessments.

# Appendix A

**Table 4. State assessment data availability in grades 4 and 8, by subject and year: 2007, 2015, and 2017**

State	Grade 4						Grade 8					
	Reading			Mathematics			Reading			Mathematics		
	2007	2015	2017	2007	2015	2017	2007	2015	2017	2007	2015	2017
Alabama	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Alaska	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Arizona	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—
Arkansas	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	Y
California	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	Y	Y
Colorado	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
Connecticut	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Delaware	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
District of Columbia	—	Y	Y	—	Y	Y	—	Y	Y	—	—	—
Florida	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
Georgia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—
Hawaii	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Idaho	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Illinois	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—
Indiana	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Iowa	Y	Y	Y	Y	Y	Y	Y	—	Y	Y	—	Y
Kansas	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Kentucky	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Louisiana	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—
Maine	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Maryland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—
Massachusetts	Y	—	Y	Y	—	Y	Y	—	Y	Y	—	Y
Michigan	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Minnesota	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mississippi	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Missouri	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
Montana	Y	—	Y	Y	—	Y	Y	—	Y	Y	—	Y
Nebraska	—	Y	Y	—	Y	Y	—	Y	Y	—	Y	Y
Nevada	Y	—	Y	Y	—	Y	Y	—	—	Y	—	—
New Hampshire	Y	Y	—	Y	Y	—	Y	Y	—	Y	Y	—
New Jersey	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—
New Mexico	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—
New York	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
North Carolina	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
North Dakota	Y	—	Y	Y	—	Y	Y	—	Y	Y	—	Y

See notes at end of table.

**Table 4. State assessment data availability in grades 4 and 8, by subject and year: 2007, 2015, and 2017—Continued**

State	Grade 4						Grade 8					
	Reading			Mathematics			Reading			Mathematics		
	2007	2015	2017	2007	2015	2017	2007	2015	2017	2007	2015	2017
Ohio	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
Oklahoma	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	Y
Oregon	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pennsylvania	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Puerto Rico	—	—	—	—	—	Y	—	—	—	—	—	Y
Rhode Island	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
South Carolina	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
South Dakota	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tennessee	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
Texas	Y	Y	Y	Y	Y	Y	Y	—	—	Y	—	—
Utah	—	Y	Y	—	Y	Y	—	—	Y	—	—	—
Vermont	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Virginia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	—	—
Washington	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
West Virginia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wisconsin	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wyoming	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Y Available.

— Not available.

NOTE: There are 43 states that have data available for all 3 years in grade 4 reading and mathematics, 41 states in grade 8 reading, and 23 states in grade 8 mathematics.

SOURCE: State education agencies.

[www.ed.gov](http://www.ed.gov)



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